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PENSOFT

Filling gaps and update of the distribution of *Strabomantis ingeri* (Cochran & Goin, 1961) (Anura: Craugastoridae) in Colombia

Elson Meneses-Pelayo,[1] Wilfredo Chinchilla-Lemus,[1] Martha Patricia Ramírez-Pinilla[2]

1 Grupo de Estudios en Anfibios y Reptiles de Santander (GEARS), Universidad Industrial de Santander, Carrera 27 calle 9, Bucaramanga, Santander, Colombia. **2** Grupo de Estudios en Biodiversidad, Universidad Industrial de Santander, Carrera 27 calle 9, Bucaramanga, Santander, Colombia.
Corresponding author: Elson Meneses-Pelayo, bioelsonp@gmail.com

Abstract
We report records of new localities and an update for the distribution of the Inger's Robber Frog, *Strabomantis ingeri*, a rare and vulnerable species from the Colombian Andean cloud forests. We report the first record of *S. ingeri* for the Boyacá department.

Key words
Vulnerable; Inger's Robber Frog; Andean cloud forest; range extension.

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Introduction

Inger's Robber Frog, *Strabomantis ingeri* (Cochran & Goin 1961), is an uncommon Terrarana frog of the Craugastoridae family, belonging to the *Sulcatus* group (Hedges et al. 2008, Lynch 1981). It is listed as Vulnerable by the IUCN Red List because its area of occurrence is less than 20,000 km^2, its area of distribution is severely fragmented, and the extent and quality of its habitat are both in continuous decline. It has a discontinuous distribution in cloud forests from both slopes of the Cordillera Oriental of the Colombian Andes, at 1700–3320 m (Castro et al. 2004, Ramírez-Pinilla 2004, Bernal and Lynch 2008). This species has been previously reported in the Cordillera Oriental in the departments of Cundinamarca (Cochran and Goin 1961), Santander (Lynch 1981) and Norte Santander (Rueda-Almonacid et al. 2004). It is believed that this species is also present in the department of Boyacá (Lynch 1997), but there are no published records from this area. Herein, we update the geographical distribution of *S. ingeri*, adding new locality records based on specimens deposited in scientific collections and visual records.

Methods

The new records of *S. ingeri* consist of 5 specimens collected under permit #4120-E1-29166, issued by ANLA on 16 June 2014, and deposited in the herpetological collection of the Universidad Industrial de Santander (MHN-UIS-A) and 2 visual records (Fig. 1, Table 1): UIS-A-5375, an adult female (SVL = 50.5 mm) collected on the foothills of the Serranía de los Yariguíes at Vereda La Colorada, municipality of San Vicente de Chucurí, Department of Santander (06.79260° N, 073.47930° W, elevation 1380 m) on 29 October 2014; UIS-A-5784,

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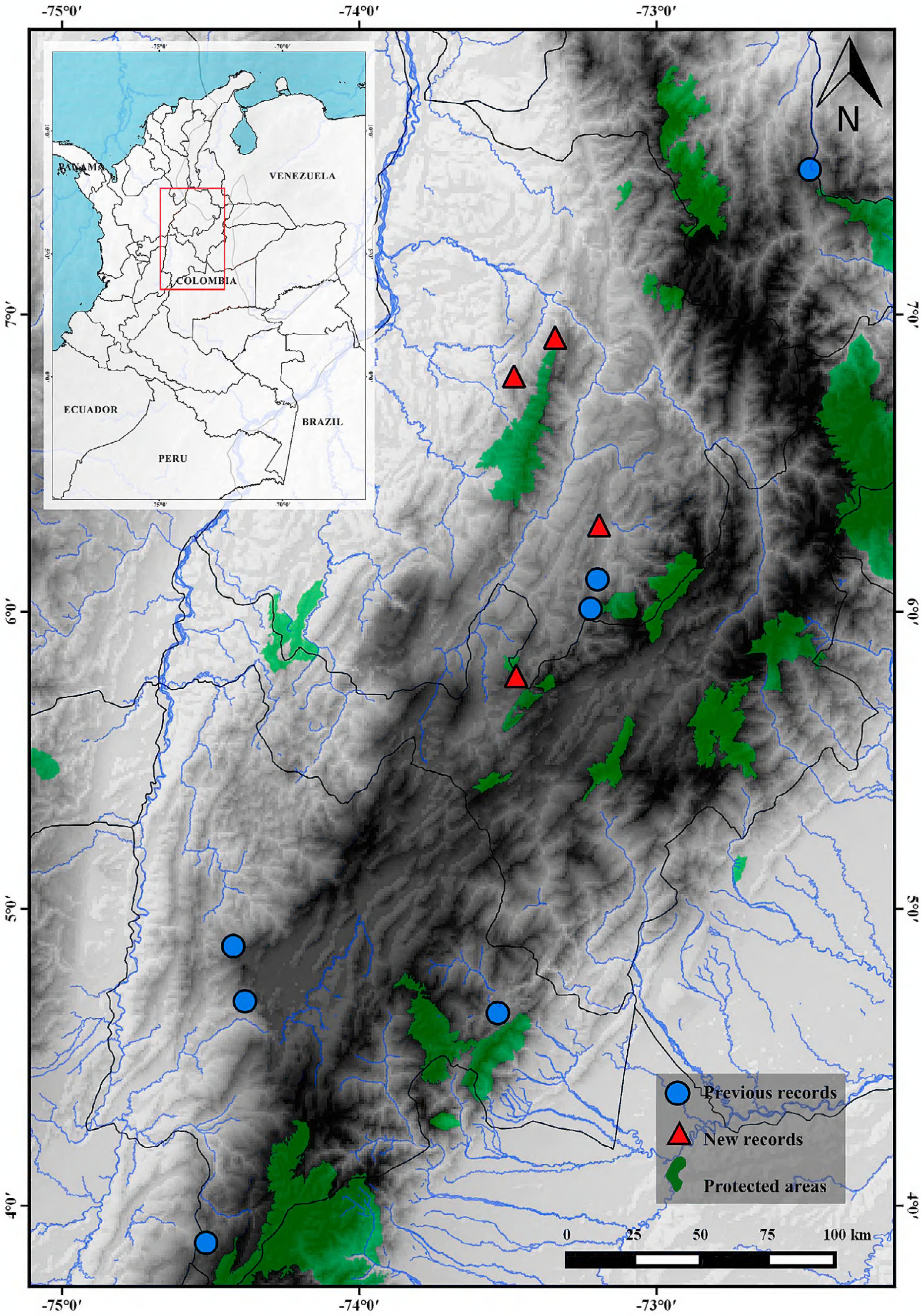

Figure 1. Current distribution of *Strabomantis ingeri* in Colombia, showing previously known (blue circles) and new records (red triangles). The green areas correspond to the protected areas in Colombia. Datum: WGS84.

Table 1. Full list of the occurrences of *Strabomantis ingeri* in Colombia, based on literature, museum data and new records.

Specimen	Department	Municipality/locality	Latitude	Longitude	Elevation (m)	Source
CNMH-81915	Cundinamarca	Gachalá	04.6487	-073.5334	2350	Cochran and Goin 1961
ICN-2507	Cundinamarca	Alban	04.8737	-074.4239	2560	Lynch 1981
ICN-10509	Cundinamarca	Tena	04.6883	-074.3846	2000	Bernal and Lynch 2008
ICN-10510	Cundinamarca	Tena	04.6883	-074.3846	2000	Bernal and Lynch 2008
ICN-13570	Cundinamarca	Tena	—	—	—	Bernal and Lynch 2008
ICN-13753	Cundinamarca	Cabrera	03.8752	-074.5151	2800	Bernal and Lynch 2008
ICN-10507	Norte de Santander	PNN Tamá	07.488	-072.484	1900	Ramírez-Pinilla 2004
ICN-4662	Santander	Charalá	—	—	—	Lynch 1981
ICN-12419	Santander	Charalá	06.0097	-073.2215	2400	Bernal and Lynch 2008
ICN (6167-73)	Santander	Charalá	06.1089	-073.1985	1750	Bernal and Lynch 2008, Lynch 1997
ICN-33168	Santander	Charalá	—	—	—	Bernal and Lynch 2008
Photographic record	Santander	Charalá	06.2906	-073.1928	1775	This research
UIS-A-5375	Santander	San Vicente de Chucurí	06.7925	-073.4792	1380	This research
UIS-A-(5876-77)	Santander	Zapatoca	06.9227	-073.3410	1500	This research
UIS-A-(5784-85)	Santander	Zapatoca	06.9227	-073.3410	1500	This research
Photographic record	Boyacá	Arcabuco	05.7981	-073.4580	2536	This research

Figure 2. *Strabomantis ingeri*. Juvenile female (SVL = 37.8 mm; UIS-A-5876) from Reserva Forestal Venceremos, Zapatoca (Santander, Colombia). Photo: Elson Meneses-Pelayo.

an adult female (SVL = 44.2 mm) and UIS-A-5785, a juvenile female (SVL = 27.4 mm) collected at Reserva Forestal Venceremos, municipality of Zapatoca, Department of Santander (06.9227° N, 073.3410° W, elevation 1500 m) on 3 July 2016; and UIS-A-5876-77, 2 females (SVL = 37.8 and 45.5 mm respectively) collected in the same locality of the above on 14 November 2016 (Fig. 2). All the specimens were found active at night, on the ground with abundant leaf litter in a heavily deforested cloud forest (Fig. 4). *S. ingeri* was found in sympatry with *Pristimantis bacchus* (Lynch 1984), *Pristimantis miyatai* (Lynch 1984), *Pristimantis penelopus* (Rueda-Almonacid & Lynch, 1983), *Diasporus anthrax* (Lynch, 2001) and *Andinobates virolinensis* (Ruiz-Carranza & Ramírez-Pinilla, 1992), the latter found only at La Colorada. Additionally, we record 1 individual of *S. ingeri* by visual register in the Reserva Rogitama, Vereda Peñas Blancas, Arcabuco municipality, department of Boyacá (05.7981° N, 073.4580° W, elevation 2536 m) (Oswaldo Cortes, photographic record, Fig. 3A), and other at Reserva Gualden, Charalá municipality, department of Santander (06.2906° N, 073.1928° W, elevation 1775 m)

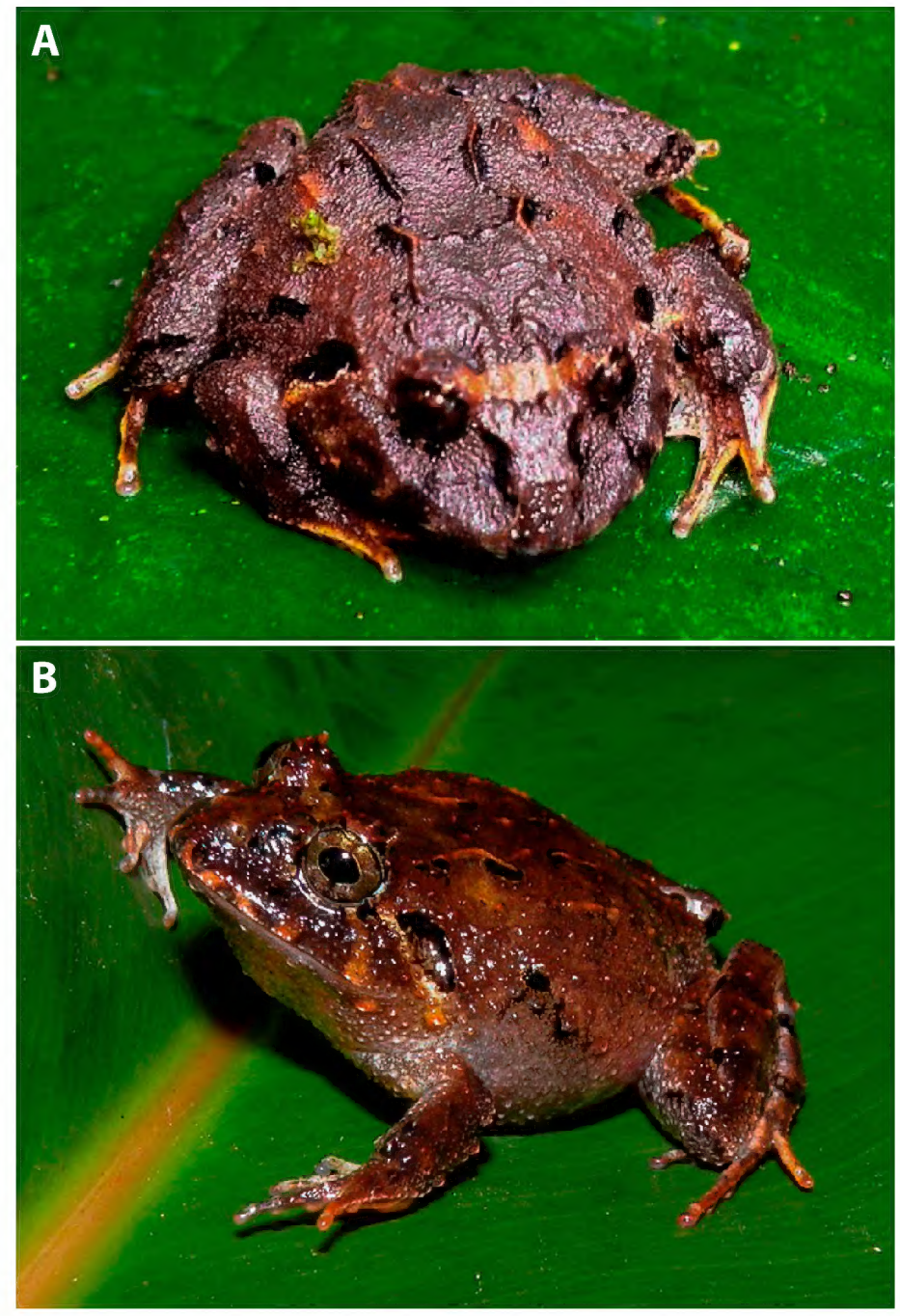

Figure 3. Photographic records of *Strabomantis ingeri*. **A.** Reserva Rogitama, Arcabuco, Boyaca. **B.** Reserva Gualden, Charalá, Santander. Photos: Oswaldo Cortes (A), Carlos Hernandez and Oscar Hernandez (B).

(Carlos Hernandez and Oscar Hernandez, photographic record, Fig. 3B).

Results

The main morphological traits considered for the identification of the collected specimens as *S. ingeri* were

Figure 4. Relict cloud forest with high deforestation, habitat of *Strabomantis ingeri* in Vereda La Colorada, San Vicente de Chucurí (Santander, Colombia). Photo: Elson Meneses-Pelayo.

(1) fingers lacking discs but small discs on toes, (2) skin of venter areolate, (3) intern tarsal fold, (4) upper eyelid bearing 1 conical tubercle, (5) toes bearing lateral fringes, (6) broad vomerine odontophores, and (7) a frontoparietal furrow formed by cranial crests elevating posteromedial to orbits (Lynch 1981, Lynch 1997). *Strabomantis ingeri* can be erroneously confused with its sister species *S. cadenai* because of the existence of contact between the zygomatic ramus of the squamosal and the posterodorsal portions of the *pars facialis* of the maxila, but the latter is only distributed in the Cordillera Occidental of Colombia (Lynch 1997, Ospina 2012).

Discussion

With these new records for the western flank of the Cordillera Oriental in Boyacá and Santander departments, we fill gaps of the discontinuous distribution of this uncommon species and expand the lower altitudinal range from 1700 m (Bernal and Lynch 2008) to 1380 m above sea level (UIS-A-5375). However, consistent inventories are needed on the eastern flank of the Cordillera Oriental to establish the real distribution of this species, as well as the state of their populations.

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Authors' Contributions

EMP wrote the text, revised specimens, made the map and photos; WCL wrote the text and revised literature; MPRP reviewed the manuscript.

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